2 C2H2 +5 O2 = 4 CO2 +2 H2O  
  
The ratio between C2H2 and O2 is 2 : 5

Hazards

-Heat, but especially fire. Think flame thrower.

-Explosion/compressed gas. Oxygen is at 1,200 psi!

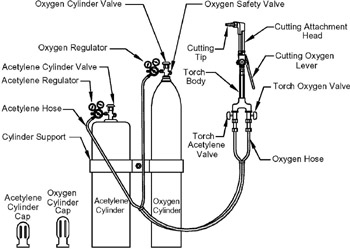
Gases

Acetylene, C2H2 (fuel)

* Comes in brown tank
* Tank valve turned on only ¼ to ½ a turn
* Line pressure must be less than 15 psi.
* Fed to the torch in a RED line

Oxygen O2

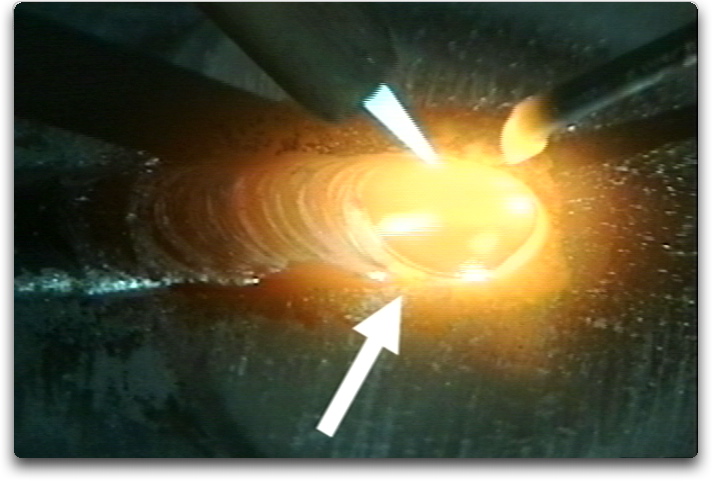
* Comes in green tank
* Necessary for combustion (fire)
* Primary hazard is tank pressure
* Open valve slowly … then open valve completely
* Fed to the torch in a GREEN line

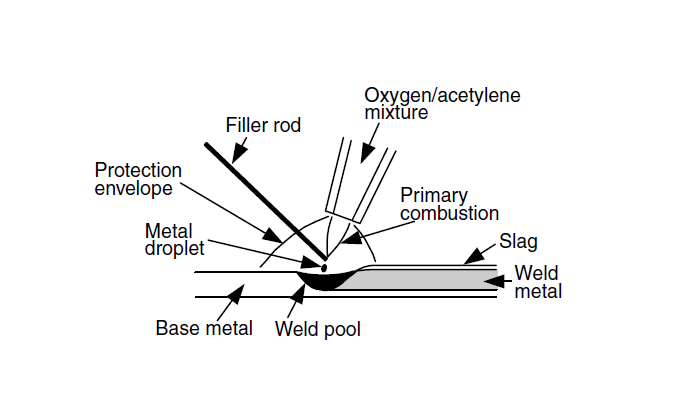
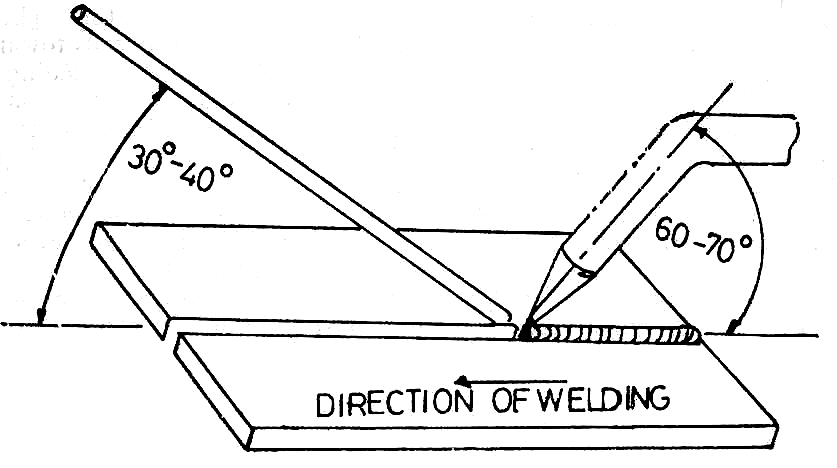
Procedure for starting

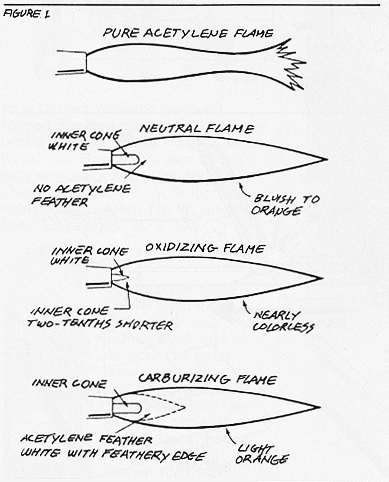
* Get set up:
  + correct torch tip, lay out gas lines from tanks
  + protective clothing ready; gloves, goggles, etc.
  + striker
* Work is ready to be welded.
  + On a fire brick and/or other safe place to gas weld.
  + In an open space away from other
* Turn on gas and regulate pressure
  + This is the last thing you do before sitting down to weld
  + Oxygen
    - Point valve away from yourself
    - *Slowly* open valve, then open all the way
    - With torch valve slightly open for gas flow
      * Set pressure based on procedure
      * Turn off torch valve
  + Acetylene
    - Slowly open valve ¼ - ½ a turn
    - Leave the valve wrench in the valve
    - With the torch valve slightly open for gas flow
      * Set pressure based on procedure
      * Turn off torch valve
  + You should now be ready to weld

Pressure settings:

* For most *welding* the fuel and oxygen should be *set to the same pressure, between 3-6 psi.* (See Fig. 20-36 p.242 for specifics)
* For *cutting* the pressures the acetylene is set at 3-5 psi, while oxygen is set to 20-30 psi. (See Fig. 22-1 p.260 for specifics)

Gas Welding 101

 *Gas welding requires patience*, but because it’s a fairly slow process it’s manageable. Supply heat till both pieces to be welded are molten and forming a puddle. Supply added metal with filler rod by dipping the filler into the molten puddle or by placing it just in front of the flame till a drop comes off. Proceed along in small circles.



Starting and adjusting the flame

It is important to set the flame correctly. Once you have set both line pressures (lets say to 4 psi). You sit down, pull down the goggles, put on the gloves, get striker and torch in hand and are all set to go.

Open the acetylene a little bit ~1/2 a turn. Use the striker to start the flame. Put down the striker out of the way, then open the oxygen to stop the soot.

Now that you have a flame, you need to adjust it to a “neutral flame’ by balancing the fuel and oxygen so that all the fuel is chemically consumed (yeah for chemistry! and

An ‘oxidizing flame’ carries too much oxygen, makes for a hotter flame.

A ‘carburizing flame’ carries too much carbon; not enough oxygen is provided for complete combustion of the acetylene. Typically this is bad for welding—it produces dirty welds (carbon soot) and is at lower temperature.

Procedure for shutting down the welder

* Turn off the acetylene valve and then the oxygen valve at the tank
* Open the torch valves one at a time to bleed the lines, then shut those valves to keep air out of the lines.
* Coil up all the lines and return equipment to storage